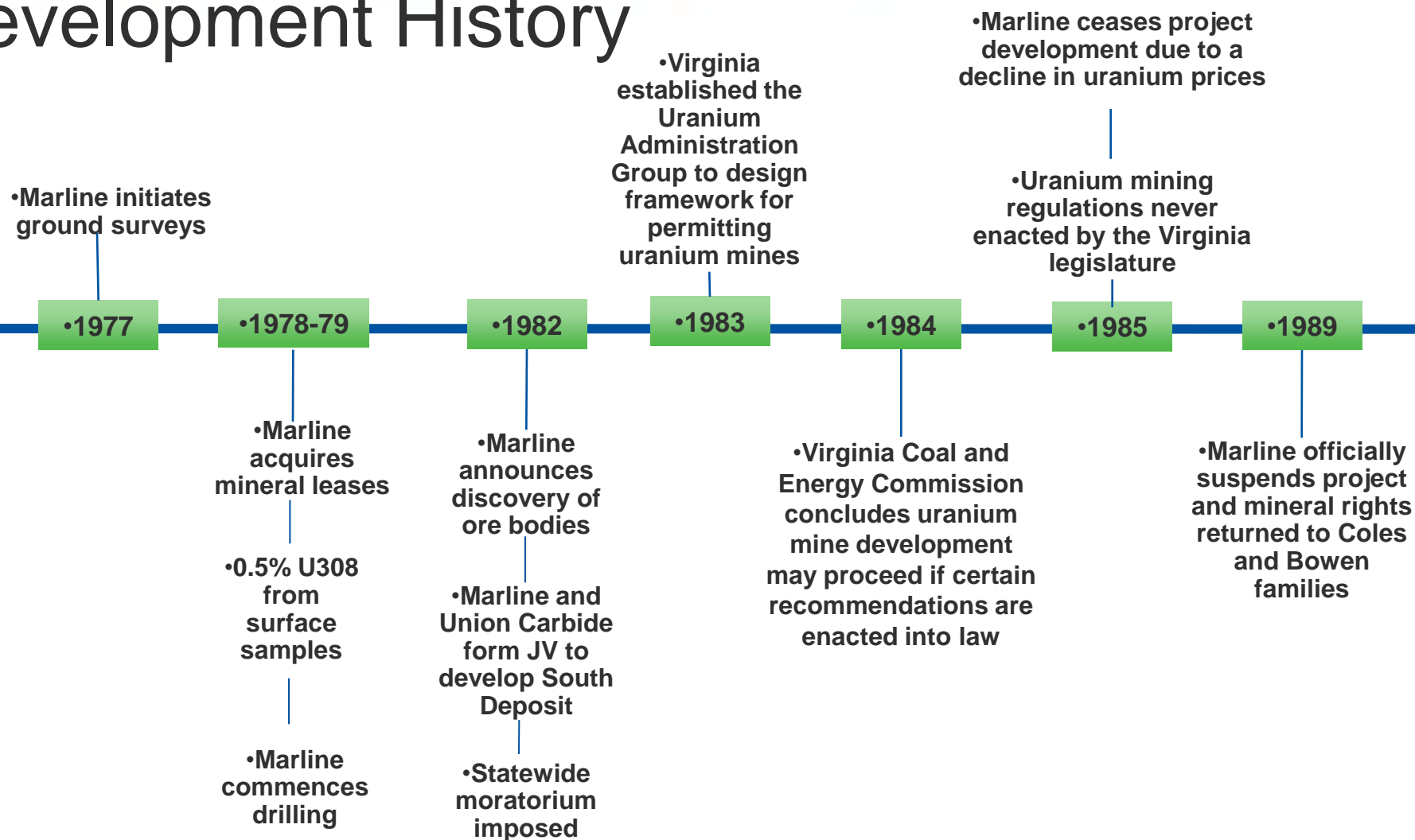




**Development of The Coles Hill Uranium Deposit
Pittsylvania County, Virginia**

*Presented by
Patrick Wales, Project Manager for Virginia Uranium*

Development History

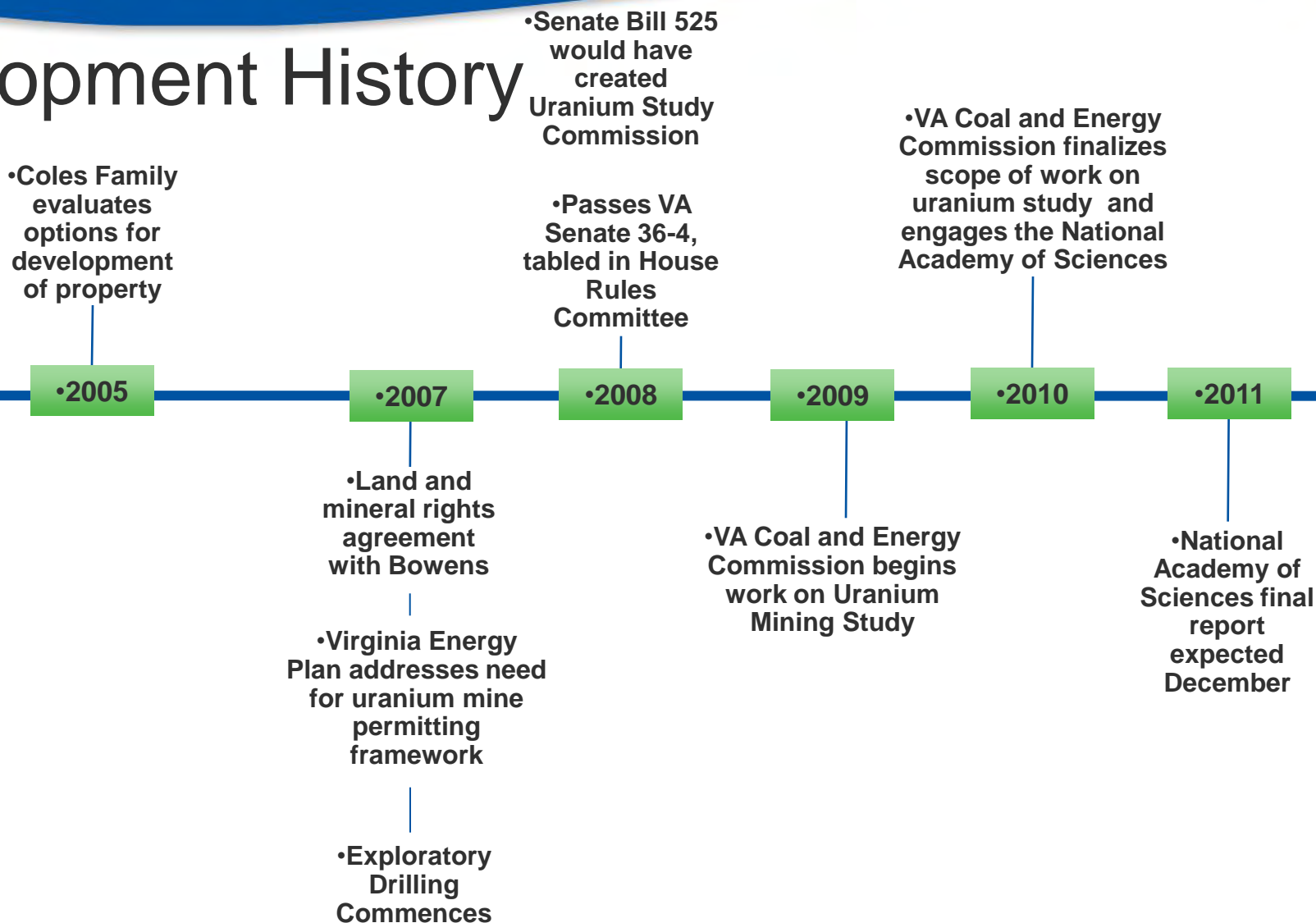


Uranium Mining Moratorium

- Moratorium, an authorized period of delay or waiting, from Latin morari "to delay"
- Per Virginia Code §45.1-274, Uranium exploration is permitted
- Per Virginia Code § 45.1-283 (1982)

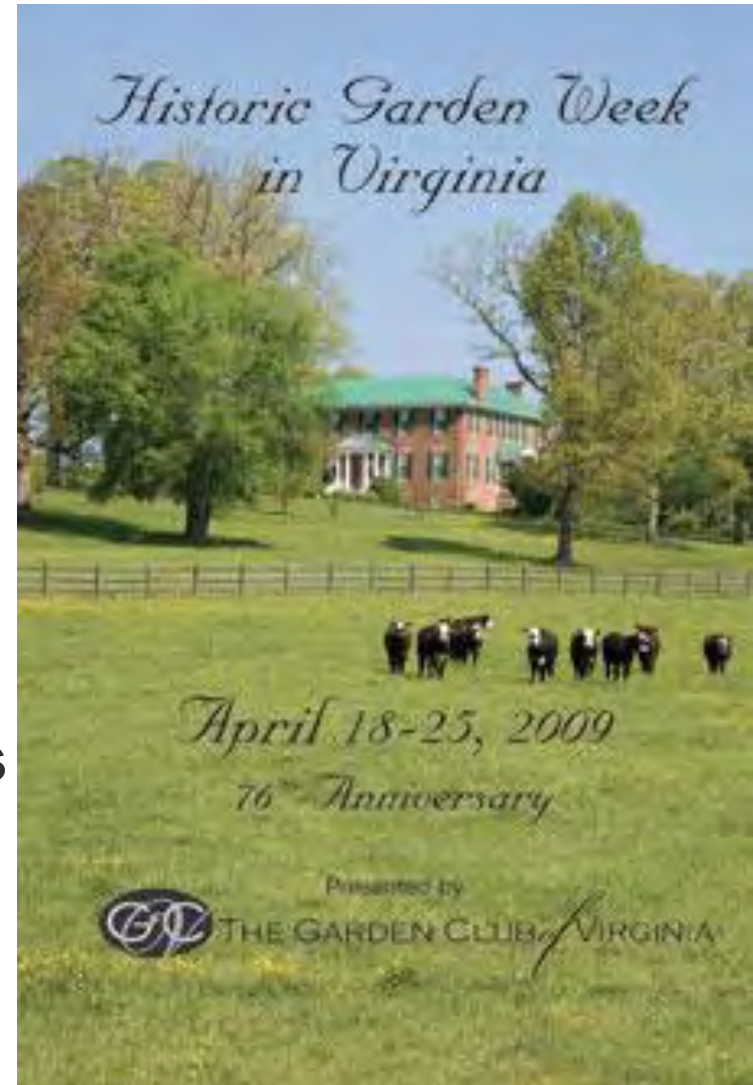
“Notwithstanding any other provision of law, permit applications for uranium mining shall not be accepted by any agency of the Commonwealth prior to July 1, 1984, and until a program for permitting uranium mining is established by statute.”

Development History



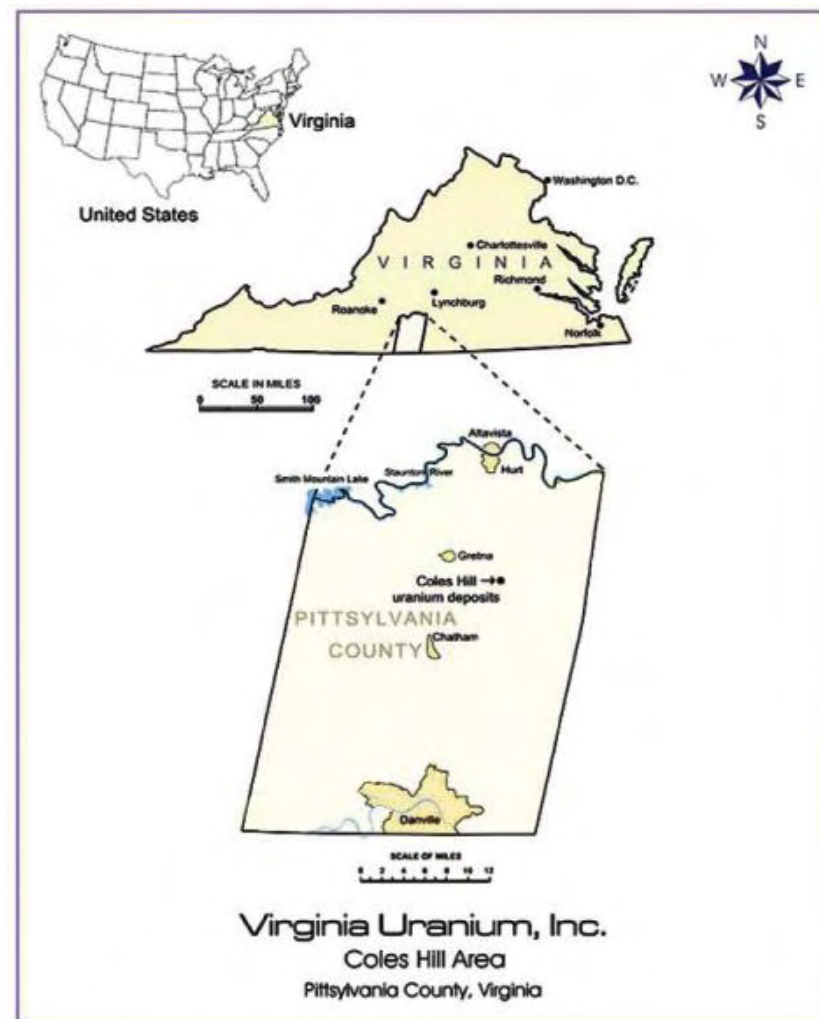
Seven Guiding Principles

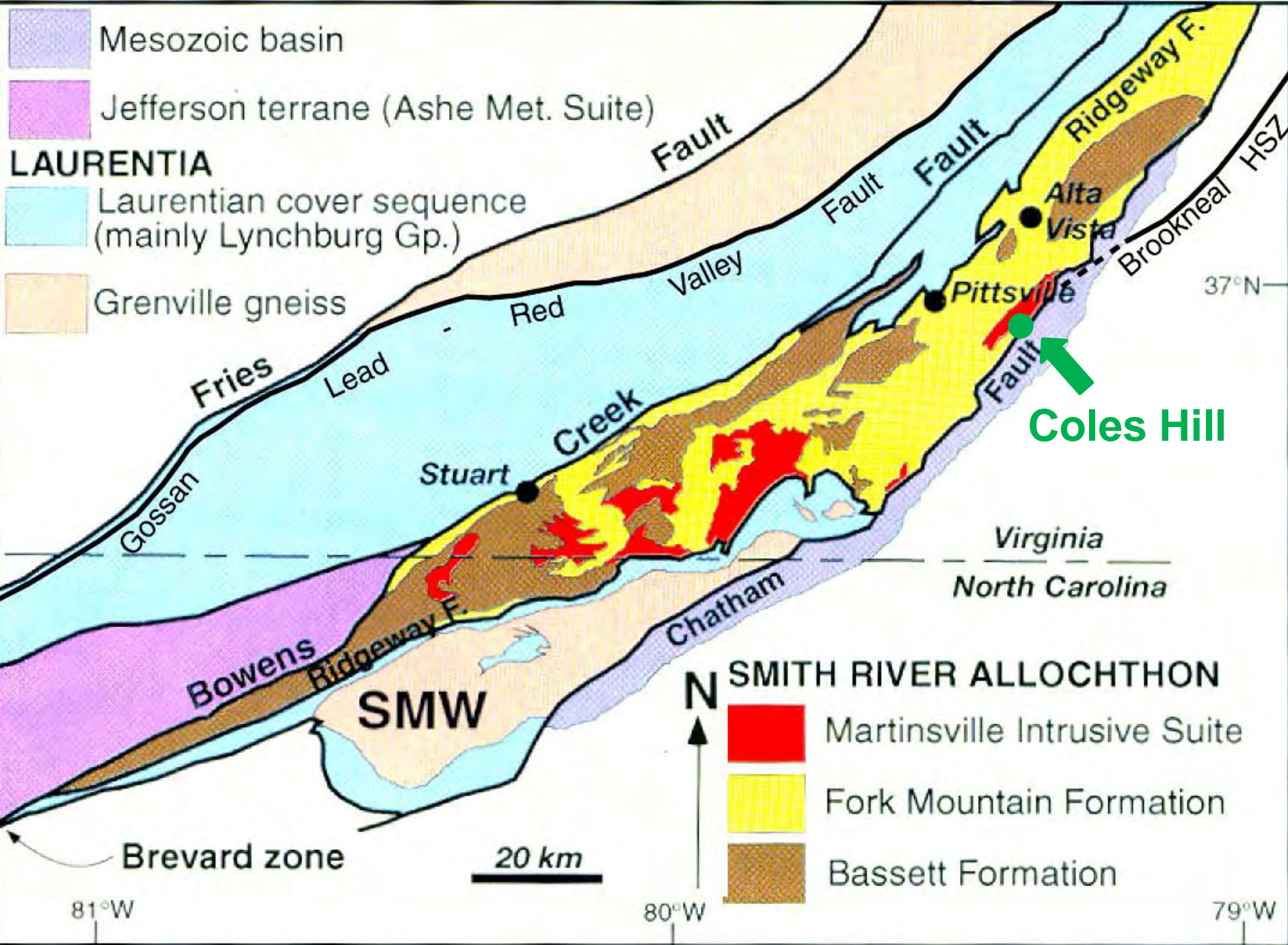
- 1) Energy Independence
- 2) Community Development
- 3) Conservation
- 4) Historic Preservation
- 5) Virginia's Agricultural Traditions
- 6) Regulatory Benchmarks
- 7) Virginia Stakeholders



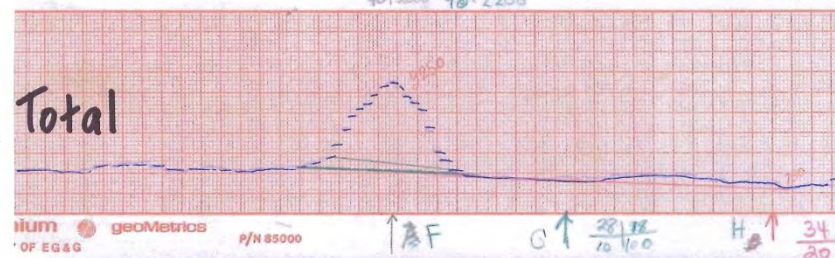
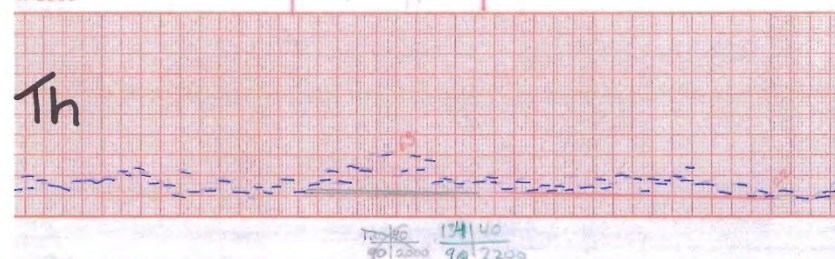
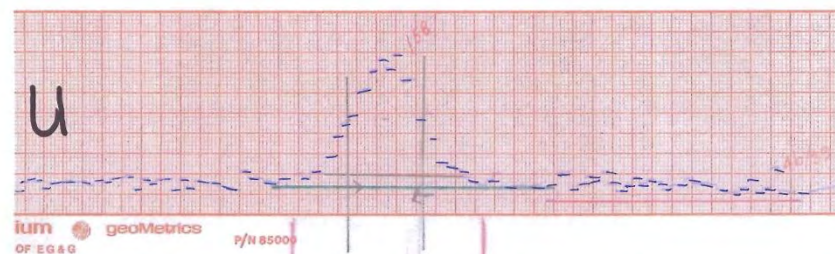
Coles Hill Uranium Deposit Location – Pittsylvania County, Virginia

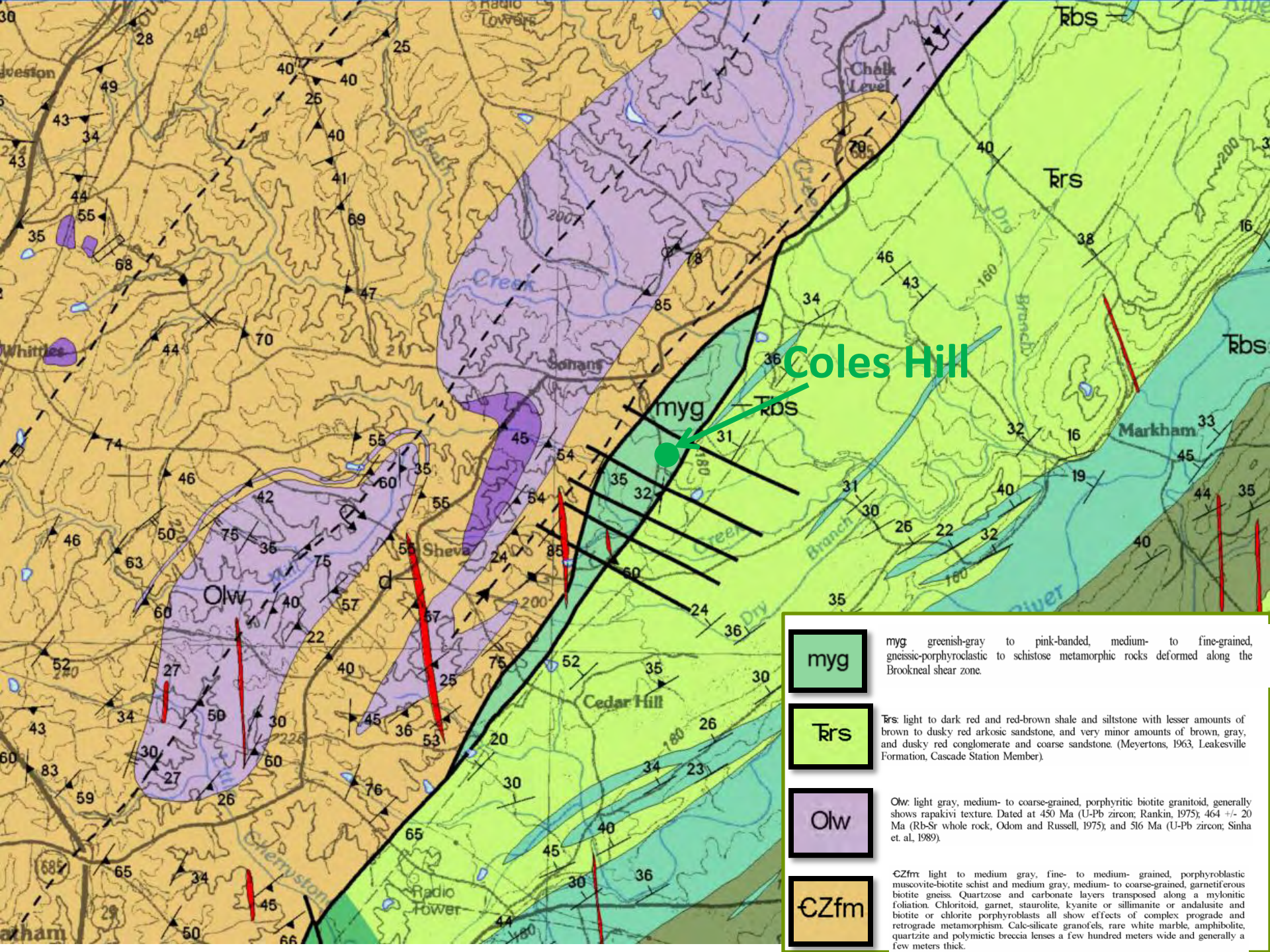
- Discovered in 1978
- Advanced to feasibility stage in 1980's
 - Project abandoned in 1989
 - Project restarted in 2007
- Of undeveloped deposits
 - Largest uranium deposit in US
 - 7th largest in the world
- 119 Million lbs of resources
 - VA reactors use ~1.6 million lbs/yr
 - Supply 38% of VA power
 - US reactors use ~55 million lbs
 - Supply 20% of US power





Coles Hill Airborne Radiometric Response





myg

myg greenish-gray to pink-banded, medium- to fine-grained, gneiss-porphroclastic to schistose metamorphic rocks deformed along the Brookneal shear zone.

Trs

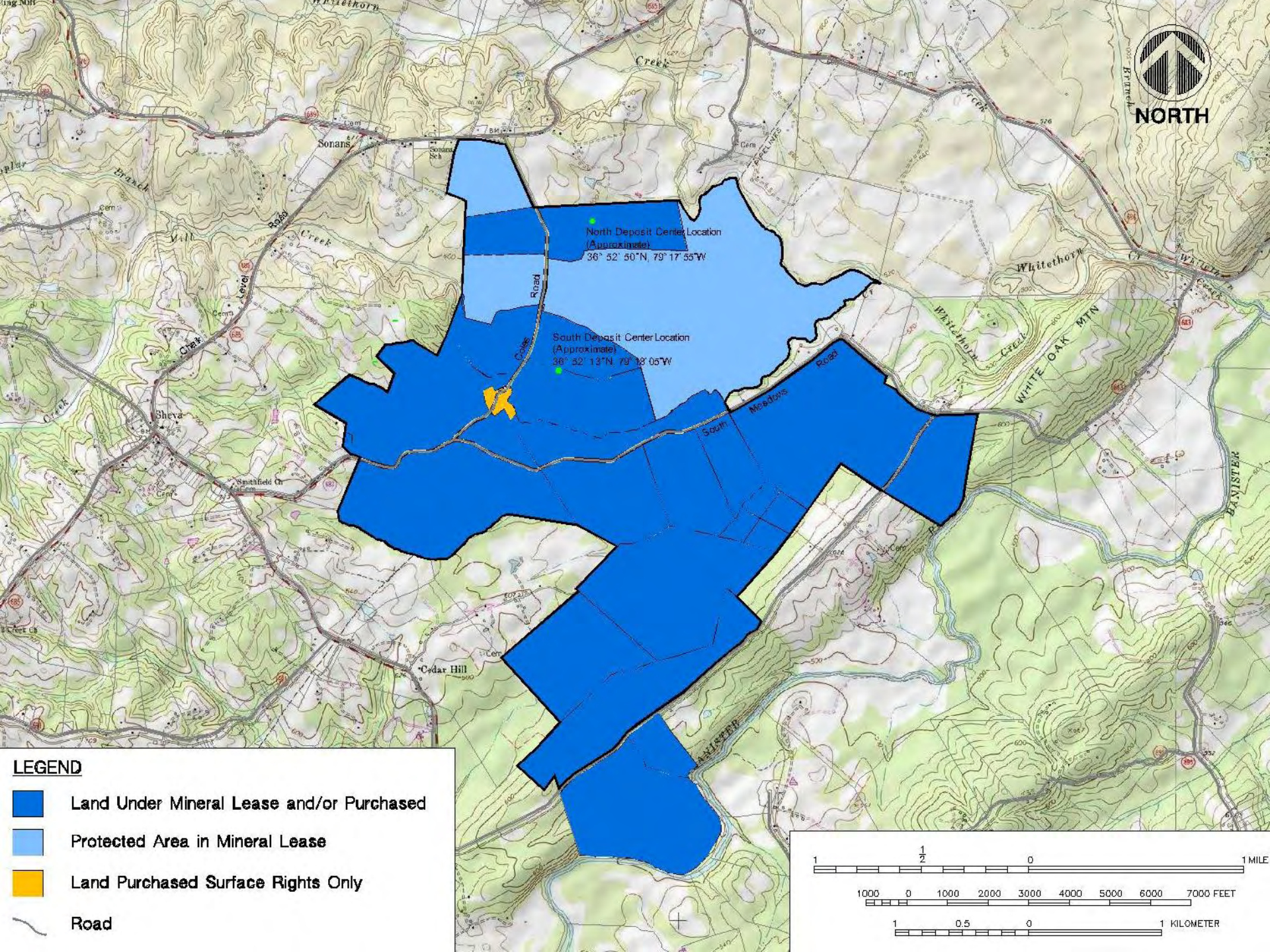
Trs: light to dark red and red-brown shale and siltstone with lesser amounts of brown to dusky red arkosic sandstone, and very minor amounts of brown, gray, and dusky red conglomerate and coarse sandstone. (Meyertons, 1963, Leakesville Formation, Cascade Station Member).

Olw





Olw: light gray, medium- to coarse-grained, porphyritic biotite granitoid, generally shows rapakivi texture. Dated at 450 Ma (U-Pb zircon; Rankin, 1975); 464 +/- 20 Ma (Rb-Sr whole rock, Odom and Russell, 1975); and 516 Ma (U-Pb zircon; Sinha et al, 1989).

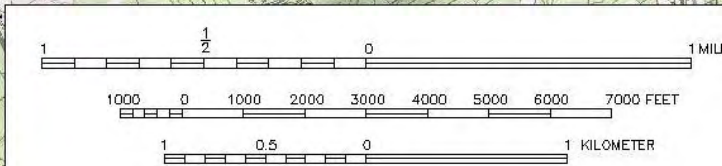
CZfm

CZfm: light to medium gray, fine- to medium- grained, porphyroblastic muscovite-biotite schist and medium gray, medium- to coarse-grained, garnetiferous biotite gneiss. Quartzose and carbonate layers transposed along a mylonitic foliation. Chloritoid, garnet, staurolite, kyanite or sillimanite or andalusite and biotite or chlorite porphyroblasts all show effects of complex prograde and retrograde metamorphism. Calc-silicate granofels, rare white marble, amphibolite, quartzite and polymictic breccia lenses a few hundred meters wide and generally a few meters thick.



LEGEND

-  Land Under Mineral Lease and/or Purchased
-  Protected Area in Mineral Lease
-  Land Purchased Surface Rights Only
-  Road





North

North Coles Hill Deposit



South Coles Hill Deposit

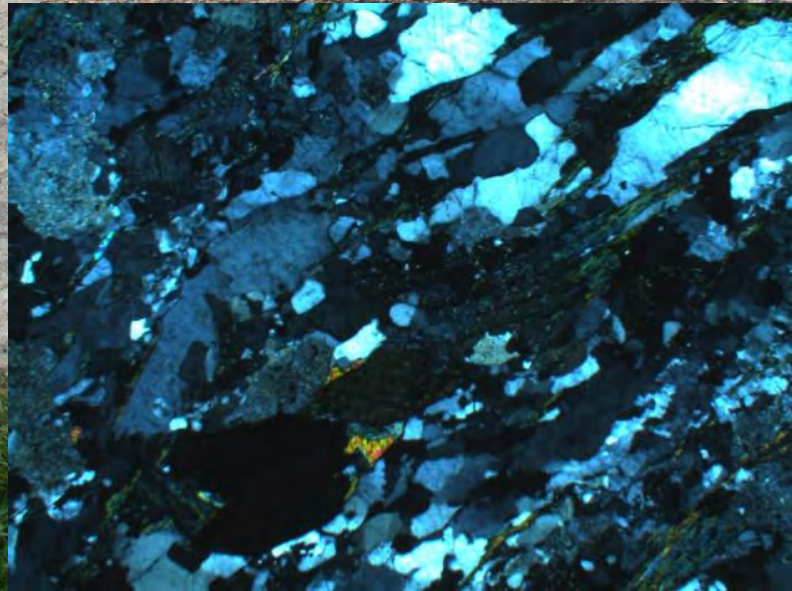


Site Office

Core Shed



Mylonitic Leatherwood Granite

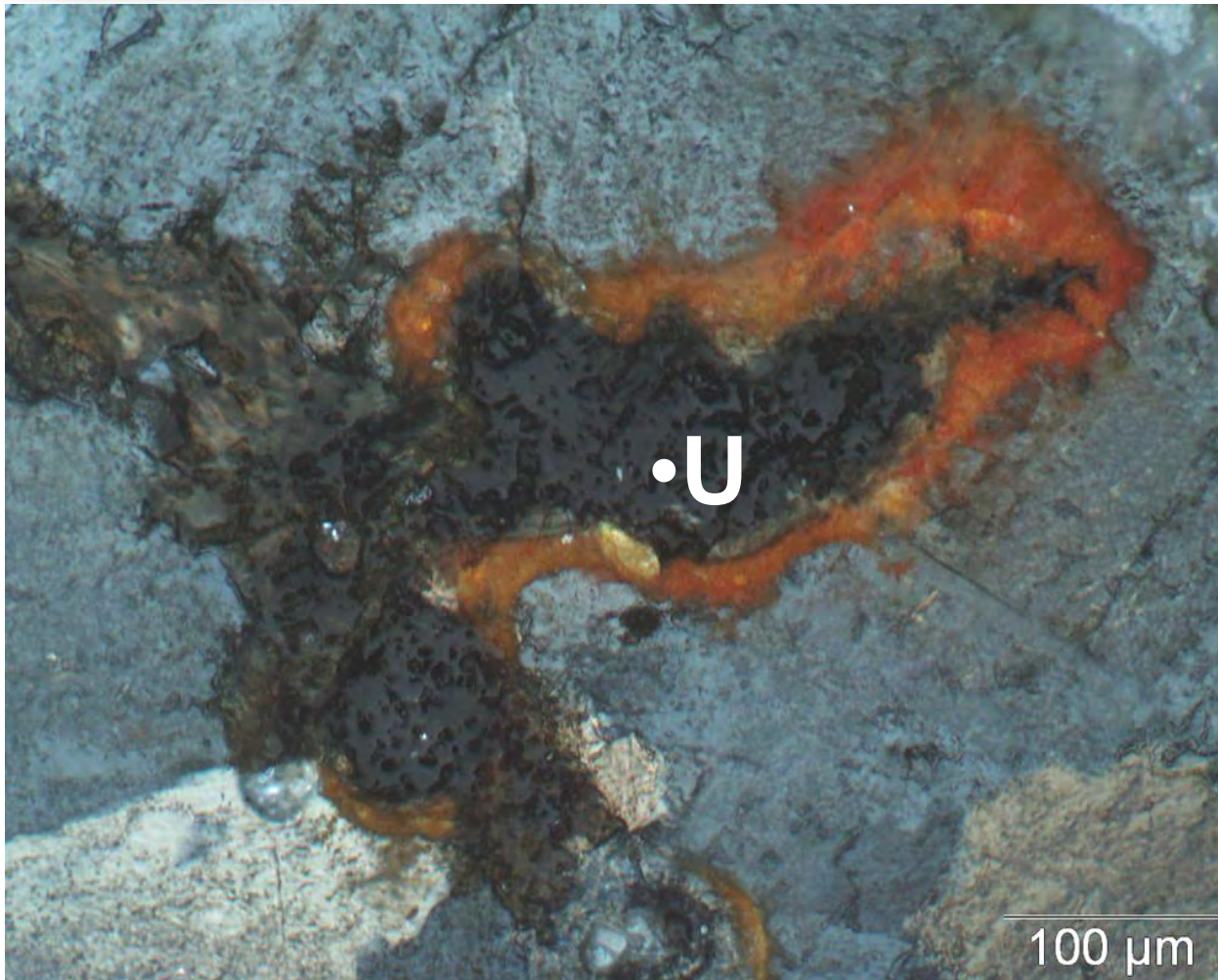


COMPANY _____ PROPERTY _____
NO. HOLE 36 NO. 03 BOX NO. 27
INTERVAL 265 TO 274

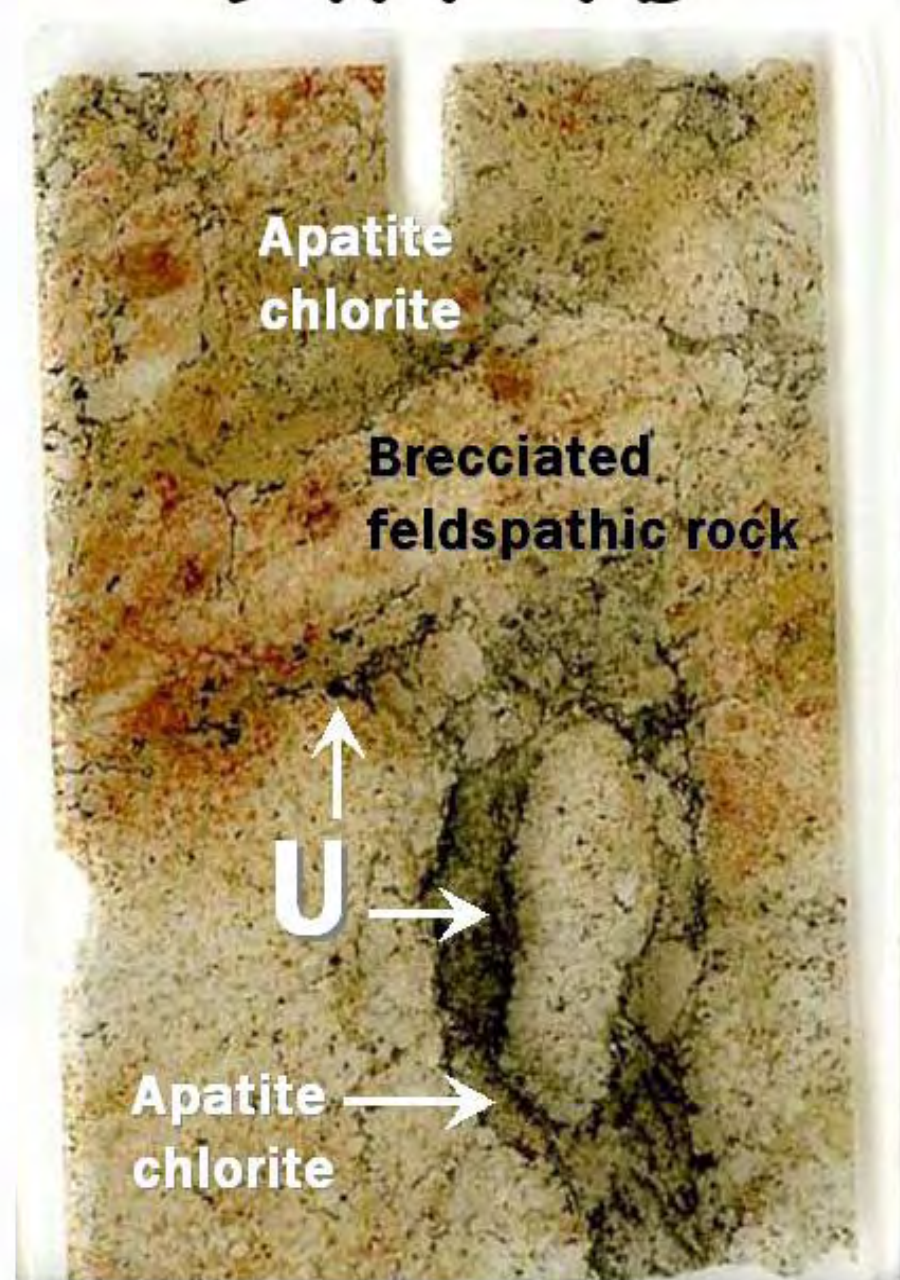


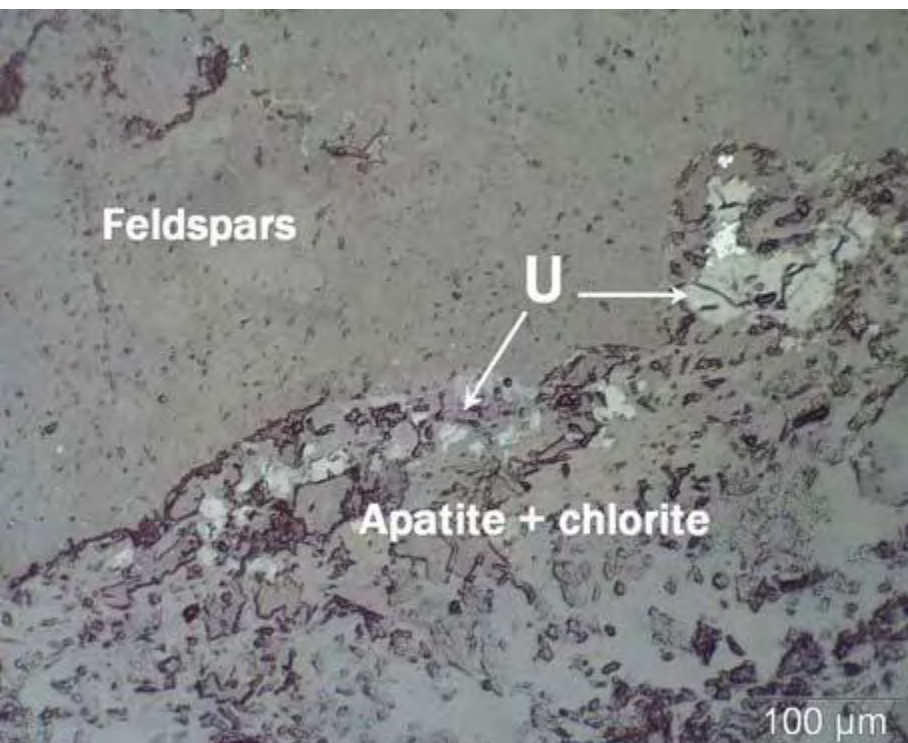
Box#27: Depth 265' to 274'

Average %U₃O₈ in this ten feet of core is 0.679% with a high of 1.72% at 271'.



Uranium oxide / pitchblende, with red hematitic halo





Uranium association with chlorite and apatite

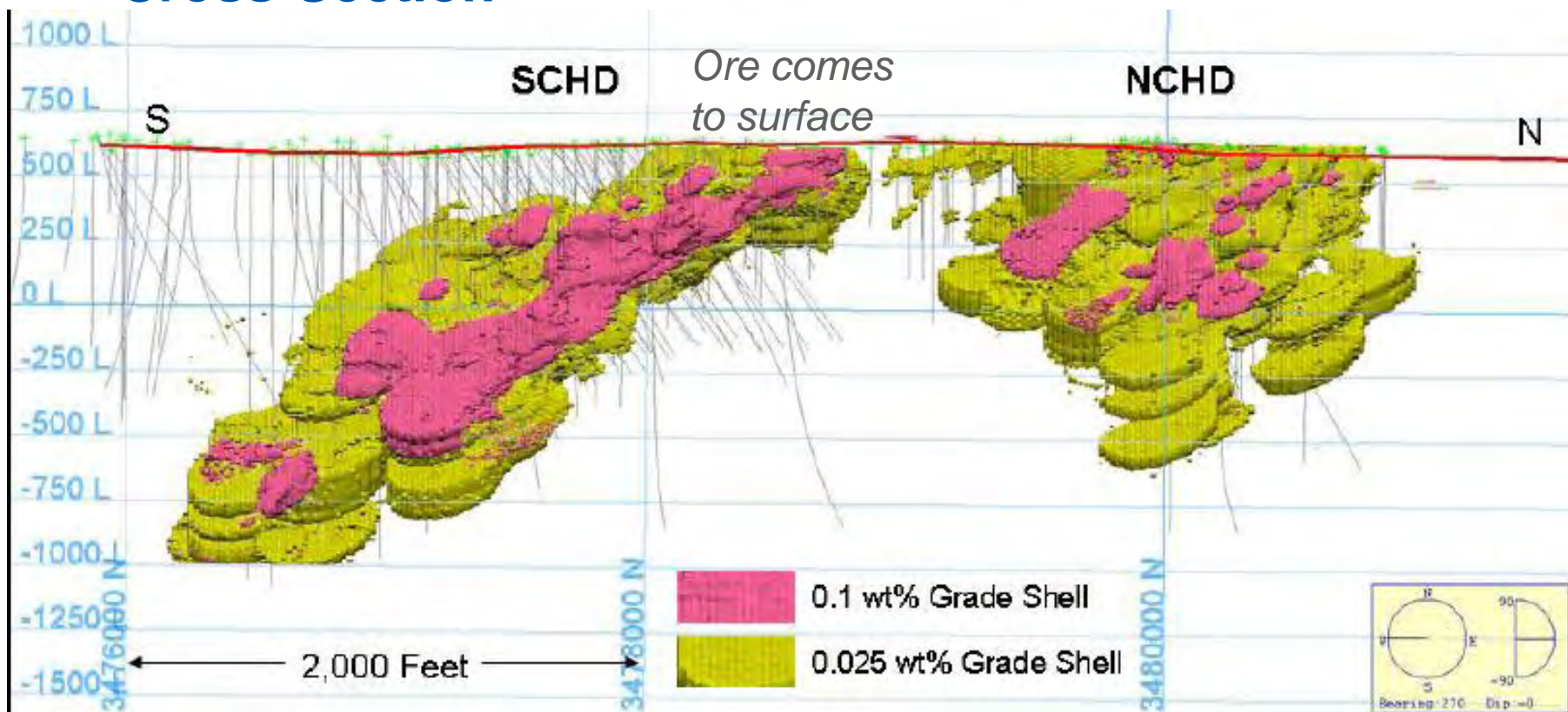
Current Total Resource Base: Measured and Indicated

Resource study prepared by Behre Dolbear, PAC and Marshall Miller June 30, 2008

| Cutoff %U ₃ O ₈ | MM Tons | %U ₃ O ₈ | MM Pounds %U ₃ O ₈ |
|---------------------------------------|---------|--------------------------------|---|
| 0.100 | 7.03 | 0.216 | 30.4 |
| 0.075 | 25.4 | 0.119 | 60.4 |
| 0.025 | 98.7 | 0.060 | 119.0 |

Higher grade zones provide numerous options for development

Cross-Section



Industrial Site of Bessines in 1978



Industrial Site of Bessines in 2001

mining stripping recovering
the tailing storage: Lavaugrasse

Industrial Site

mining stripping recovering the
tailing storage: Brugeaud open
pit

water treatment plant

water collector

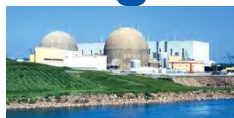
Gartempe river

Reclaimed Bessines Site (June 2009)



Virginia's Nuclear Heritage

- Dominion (North Anna & Surry)
 - 4 Nuclear Reactors
 - Provide 35% of Virginia's Power
- Babcock & Wilcox (Lynchburg)
 - Military Fuel Fabrication
- AREVA (Lynchburg)
 - Commercial Fuel Fabrication
- Naval Fleet in Norfolk
- AREVA and Northrop Grumman(Newport News)
 - Manufacture Nuclear Reactor Parts
- Nuclear Engineering Curriculum
 - Old Dominion, Virginia Commonwealth, Virginia Tech
- **All need FUEL = Virginia Uranium**
 - **119 million lbs of Resources**



Virginia's Mining Heritage

- Colonist began mining in 1609
- First US Coal mine in Richmond 1748
- 400 different minerals found and
 - 30+ different minerals produced in Virginia
 - Annual value of nearly \$2 billion
- **10th largest producer of coal**
- **5th largest producer of crushed stone**
- Home to many prominent mining companies
 - Alpha Natural, Massey, Luck Stone
- One of four companies to manufacture 400 ton mining trucks
 - Liebherr, Newport News
- Virginia Tech Mining Engineering & Geosciences



Virginia's Uranium Studies

1981: Virginia General Assembly approved House Joint Resolution No. 324 Requesting Virginia Coal & Energy Commission ("CEC") to evaluate uranium

1983: Uranium Administrative Group ("UAG") established in SB-155 that finds that a preliminary study

"...has not identified any environmental or public health concern that could preclude uranium development in Virginia."

1984: Recommendation by 16 of 18 (89%) UAG members ***"We conclude that the moratorium on uranium development can be lifted..."***

2008: CEC creates uranium mining sub-committee to evaluate uranium development again

2010: CEC engaged National Academy of Sciences ("NAS") for evaluation study

2011: NAS study results expected

REPORT OF THE

**Virginia Coal and
Energy Commission**

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA



Senate Document No. 15

COMMONWEALTH OF VIRGINIA
RICHMOND
1985

THE NATIONAL ACADEMY OF SCIENCES
Uranium Mining Study
Independent, Expert Advice in Service to the Nation

- (1) Assess the potential short- and long-term occupational and public health and safety considerations from uranium mining, milling, processing, and reclamation.**
- (2) Review global and national uranium market trends.**
- (3) Identify and describe the main types of uranium deposits worldwide .**
- (4) Analyze the impact of uranium mining, milling, processing, and reclamation operations on public health, safety.**
- (5) Review the geologic, environmental, geographic, climatic, and cultural settings and exploration status of uranium resources in Virginia.**
- (6) Review the primary technical options and best practices approaches for uranium mining, milling, processing, and reclamation that might be applicable within Virginia.**

THE NATIONAL ACADEMY OF SCIENCES

Uranium Mining Study

- (7) Review the state and federal regulatory framework for uranium mining, milling, processing, and reclamation.**
- (8) Review federal requirements for secure handling of uranium materials, including personnel, transportation, site security, and material control and accountability.**
- (9) Identify the issues that may need to be considered regarding the quality and quantity of groundwater and surface water, and the quality of soil and air from uranium mining, milling, processing, and reclamation.**
- (10) Assess the potential ecosystem issues for uranium mining, milling, processing, and reclamation.**
- (11) Identify baseline data and approaches necessary to monitor environmental and human impacts associated with uranium mining, milling, processing, and reclamation.**
- (12) Provide a non-technical summary of the report for public education purposes.**

Critical Path Forward

- Scoping study
 - Underway, results expected in June 2010
- Pre-Feasibility Study
 - Likely in 2011
- National Academy of Sciences, Uranium Mining Study
 - Results expected December 2011
- Feasibility Study
 - Only once VA promulgates regulations
- Local Zoning
- NRC licensing process
 - Mill and tailings management
- State Mining and associated state permits



Conclusions

- The NAS study will provide
 - Independent, expert advice
 - Information on decisions about the future of uranium mining in Virginia
- The NAS study will NOT
 - Recommend whether or not uranium mining should be permitted
 - Include site-specific assessments
- Virginia Uranium
 - committed to focused long term development plan

